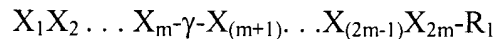


## IN THE CLAIMS

Please replace claims 1 and 49 with the following amended claims. A marked up version of the claims, indicating the changes made, is attached hereto as appendix A.

- 61 1. (Three times amended) A method for designing a specific polyamide



wherein

$X_1$ ,  $X_2$ ,  $X_m$ ,  $X_{(m+1)}$ ,  $X_{(2m-1)}$ , and  $X_{2m}$  are carboxamide residues forming carboxamide binding pairs

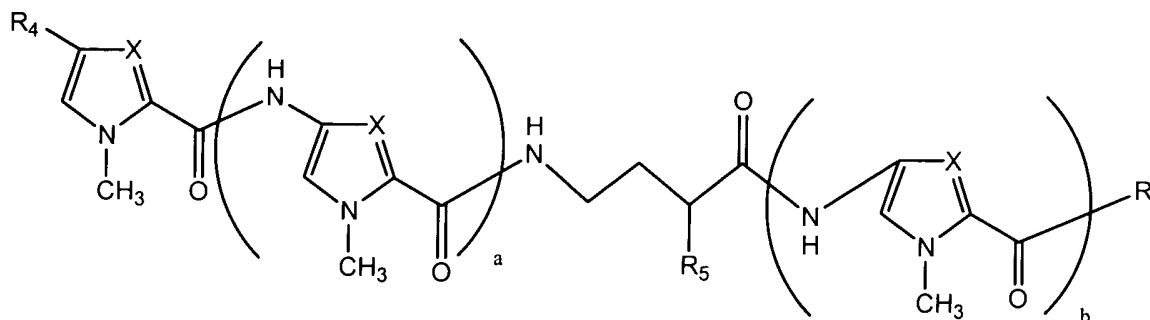
$X_1/X_{2m}$ ,  $X_2/X_{(2m-1)}$ ,  $X_m/X_{(m+1)}$ ,

$\gamma$  is  $\gamma$ -aminobutyric acid or 2,4 diaminobutyric acid, and

$R_1$  is  $-\text{NH}(\text{CH}_2)_{0-100}\text{NR}_2\text{R}_3$ ,  $-\text{NH}(\text{CH}_2)_{0-12}\text{CONH}(\text{CH}_2)_{0-100}\text{NR}_2\text{R}_3$ , or  $-\text{NHR}_2$ , where  $R_2$  and  $R_3$  are independently selected from the group consisting of H, Cl, NO, N-acetyl, benzyl,  $\text{C}_{1-100}$  alkyl,  $\text{C}_{1-100}$  alkylamine,  $\text{C}_{1-100}$  alkyldiamine,  $\text{C}_{1-100}$  alkylcarboxylate,  $\text{C}_{1-100}$  alkenyl, a  $\text{C}_{1-100}$  alkynyl, and  $\text{C}_{1-100}$  alkyl-L, where L is selected from the group consisting of arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens, solid phase supports, oligodeoxynucleotides, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- $\alpha$ -lipoic acid, acridine, captothesin, pyrene, mitomycin, texas red, anthracene, anthrinilic acid, avidin, DAPI, and oligodeoxynucleotide, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, and (+)- $\alpha$ -tocopheral, suitable for use as a DNA-binding ligand that is selective for identified target DNA-sequences  $5'-\text{WN}_1\text{N}_2 \dots \text{N}_m\text{W}-3'$  where m is an integer having a value from 3 to 6, the method comprising:

- (a) identifying a target sequence of double stranded DNA having the form 5'-WN<sub>1</sub>N<sub>2</sub> ... N<sub>m</sub>W-3', N<sub>1</sub>N<sub>2</sub> ... N<sub>m</sub> being the sequence to be bound by carboxamide residues, wherein each N is independently chosen from the group A, G, C, and T, each W is independently chosen from the group A and T, and m is an integer having a value from 3 to 6;
- (b) representing the identified sequence as 5'-Wab ... xW-3', wherein *a* is a first nucleotide to be bound by the X<sub>1</sub> carboxamide residue, *b* is a second nucleotide to be bound by the X<sub>2</sub> carboxamide residue, and *x* is the corresponding nucleotide to be bound by the X<sub>m</sub> carboxamide residue;
- (c) defining *a* as A, G, C, or T to correspond to the first nucleotide to be bound by a carboxamide residue in the identified sequence;
- (d) selecting Im as the X<sub>1</sub> carboxamide residue and Py as the X<sub>2m</sub> carboxamide residue if *a* = G;
- (e) selecting Py as the X<sub>1</sub> carboxamide residue and Im as the X<sub>2m</sub> carboxamide residue if *a* = C;
- (f) selecting Hp as the X<sub>1</sub> carboxamide residue and Py as the X<sub>2m</sub> carboxamide residue if *a* = T;
- (g) selecting Py as the X<sub>1</sub> carboxamide residue and Hp as the X<sub>2m</sub> carboxamide residue if *a* = A; and
- (h) repeating steps c - g for *b* through *x* until all carboxamide residues are selected;
- wherein Im is N-methylimidazole, Hp is 3-hydroxy-N-methylpyrrole, Py is N-methylpyrrole, A is adenine, G is guanine, C is cytosine, and T is thymine.
- GI  
Cand

49. (Twice Amended) A polyamide designed by the method of claim 1, having the structure:



wherein

$R_4$  is selected from the group consisting of H,  $NH_2$ , SH, Cl, Br, F, N-acetyl, and N-formyl;

$R_5$  is H or  $NH_2$ ;

$R_1$  is  $-NH(CH_2)_{0-100}NR_2R_3$ ,  $-NH(CH_2)_{0-12}CONH(CH_2)_{0-100}NR_2R_3$ , or  $-NHR_2$ , where  $R_2$  and  $R_3$  are independently selected from the group consisting of H, Cl, NO, N-acetyl, benzyl,  $C_{1-100}$  alkyl,  $C_{1-100}$  alkylamine,  $C_{1-100}$  alkyldiamine,  $C_{1-100}$  alkylcarboxylate,  $C_{1-100}$  alkenyl, a  $C_{1-100}$  alkynyl, and  $C_{1-100}$  alkyl-L, where L is selected from the group consisting of arylboronic acids, biotins, polyhistidines comprised from about 2 to 8 amino acids, haptens, solid phase supports, oligodeoxynucleotides, N-ethylnitrosourea, fluorescein, bromoacetamide, iodoacetamide, DL- $\alpha$ -lipoic acid, acridine, captothesin, pyrene, mitomycin, texas red, anthracene, anthrinilic acid, avidin, DAPI, and oligodeoxynucleotide, isosulfan blue, malachite green, psoralen, ethyl red, 4-(psoraen-8-yloxy)-butyrate, tartaric acid, and (+)- $\alpha$ -tocopheral;

each X is independently selected from the group consisting of N, CH, and COH;

each a is an integer from 2 to 5; and

each b is an integer from 3 to 6.